

Written Testimony of

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House of Representatives

Committee on Energy & Commerce

LIFT America: Revitalizing our Nation's Infrastructure and Economy

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Chairman Pallone, Ranking Member McMorris Rodgers, Members of the Committee, it is a privilege to appear before you again.

The Leading Infrastructure For Tomorrow's America (LIFT) Act means that everyone in America can finally have the 21st century communications services they will need to participate in our society, our economy, and our democracy. Because it departs from the disconnects resulting from trying to make internet era realities work within telephone era concepts, LIFT is an historic opportunity for all Americans to redefine their expectations about the high-speed broadband service that is necessary to experience the benefits of the internet.

The internet is the most powerful platform in the history of the planet. Unfortunately, it is not yet pervasive.

COVID has made us re-appreciate the things the internet allows us to accomplish. COVID has also identified the adverse effects arising from the absence of adequate high-speed broadband, whether it is unavailable, inadequate, or too expensive. Just look at the headlines:

"Why rural Americans are having a hard time working from home"

[CNN 4.29.20](#)

"America's Terrible Internet Is Making Quarantine Worse"

[The Atlantic 8.17.20](#)

"School sends California family a hotspot after students went to Taco Bell to use their free WiFi"

[CNN 8.31.20](#)

"The latest crisis: Low-income students are dropping out of college this fall in alarming numbers *Many low-income students say they don't have good enough WiFi at home to take online classes*"

[Washington Post 9.16.20](#)

"A year into the pandemic, thousands of students still can't get reliable WiFi for school"

[USA Today 2.4.21](#)

Members of the committee, examples like this are not an example of the Digital Divide, they tell the story of a Digital Chasm. Crossing that chasm means expanding support for both broadband deployment and adoption.

BROADBAND DEPLOYMENT

This legislation authorizes \$80 billion for broadband deployment – and it does it in a manner similar to how our nation deployed another network, the interstate highway system: with “pay for it once” grants. For too long we have been stuck with 1930s thinking about subsidies to operating companies. What worked for electricity and telephones, however, has failed to deliver high-speed internet to unserved areas.

The FCC has spent approximately \$40 billion over the last decade in high-cost subsidies. These expenditures have, no doubt, produced results, but they have failed to deliver the goal of universal access to high-speed broadband. The program failed in this regard because it failed to insist on futureproof technology, failed to establish meaningful standards, and focused more on the companies being subsidized than the technology being used or the people who were supposed to be served.

To address the broadband deployment challenge requires resolving multiple issues:

Definition of “Broadband” – The recent [letter](#) to the FCC and other agencies by a bipartisan group of Senators called attention to a matter this bill addresses head-on: how the present definition of “broadband” is substandard. As a result, they wrote, federal funds were being spent on new connections that were “not capable of providing sufficient download and upload speeds and quality.” The senators recommended a symmetrical 100 Mbps down and 100 Mbps up as a baseline for new subsidized deployments. The LIFT Act – wisely, I believe – goes beyond that to prioritize gigabit service.

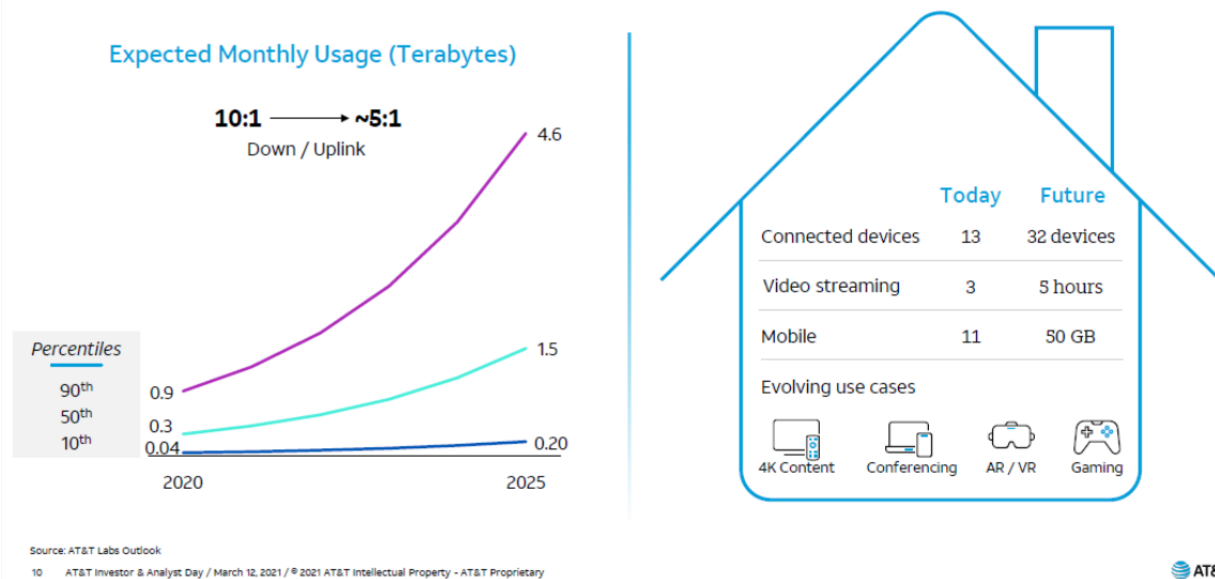
It was during my tenure that the FCC voted to increase the definition of “broadband” to 25 Mbps into the location (the so-called “down” speed) and 3 Mbps out (“up”). The previous standard had been [4 Mbps down and 1 Mbps up](#). At the time I described the new definitions as the minimum “table stakes” for viable internet speed. Today, half a dozen years later, that speed is completely unacceptable. It is not adequate for today, and certainly is far from adequate for tomorrow.

According to the [Bandwidth Calculator](#) of the non-profit organization Broadband Now, the amount necessary for a family of four, each with their own smartphone, sharing two laptops, two TVs, two tablets, one game console and a smart home device such as Alexa requires a service of 108 Mbps downstream. That is four times the current definition of what constitutes “broadband” and thus four times (and sometimes more) than current government programs require to receive subsidy dollars.

A [presentation](#) at the recent AT&T analyst day forecast that by 2025 customer usage of internet connected devices in the home would soar beyond the calculations just cited, thus bringing even greater demand for throughput – including a doubling of upstream traffic – as well as driving up the total amount of data being consumed:

AT&T: Wired Usage Ramp

Customer connectivity usage continues to accelerate



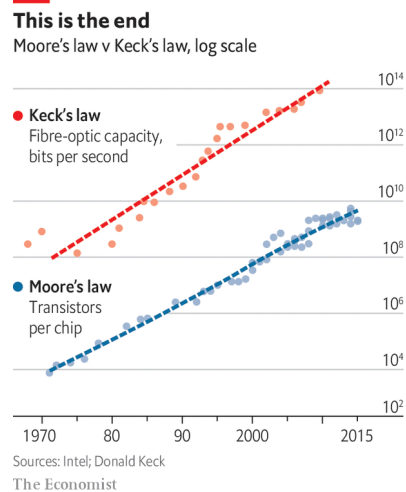
The challenge is not those areas where private enterprise has delivered high-speed internet access. Internet service providers (ISPs) should be applauded for the fact that today, [according to NCTA](#), 80 percent of American homes have access to 1 gigabit (Gbps) internet service. If 80 percent of Americans can receive access to 1 Gbps today, then any infrastructure plan should prioritize a pathway to such level of service for **all** Americans. The LIFT Act correctly makes such a prioritization for symmetrical 1 Gbps service.

Futureproofing Public Expenditures – Too often the existing federal broadband programs have subsidized what can only be characterized as the network of yesterday. Not only should such funds build an up-to-date network, but also a network that is futureproofed from becoming inadequate in a few years.

Now, I know that many believe in the future of wireless gigabit throughput. I have long been an advocate for wireless connectivity; but the consequence of the finite nature of radio spectrum

is that it is not a full-fledged substitute for wired broadband. There may exist in the lab, and in limited installations, gigabit wireless delivery, but it is not widely applicable for broadband point-to-multipoint deployment. Even the major wireless carriers that invested heavily in FCC-run auctions of millimeter wave spectrum as a high-speed delivery pathway have cut back both their expectations and promises for widespread, point-to-multipoint wireless delivery at gigabit speeds. Wireless may be a last resort option in the most isolated areas, but it should not be a first resort for most of America.

To prioritize symmetrical 1 gigabit capacity, as the bill does, is to prioritize a “fiber first” policy.¹ Fiber’s benefits are driven by the combination of increased processing power at the ends of the fiber (exemplified by Moore’s Law) and the ability to handle that increasing capacity (Keck’s Law). While both Moore’s Law and Keck’s Law may be slowing from their exponential pace, applying increased processing to the data flowing through a conduit that itself has increasing capacity is the definition of futureproofing. This [chart](#) is revealing about how the capacity of fiber has continued to grow over the years along the lines of Moore’s Law – a phenomenon that policy should embrace.

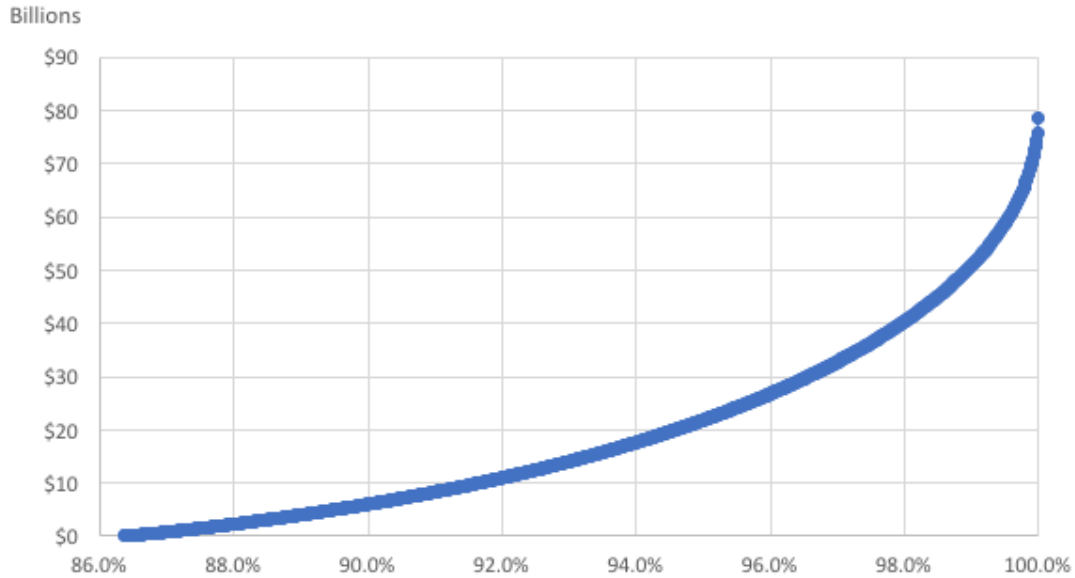


Pay for Buildout Once – The LIFT Act wisely chooses a “pay once” strategy to subsidize broadband construction. In a January 2017 analysis, the FCC calculated that a one-time \$80 billion payment would build out fiber-to-the-premise (FTTP) to all unserved locations. Significantly, about half that amount could build FTTP to 85 percent of unserved locations (so that approximately 98 percent of all locations in the nation would have broadband service) and that construction could become a self-sustaining business. The final \$40 billion would build out the final 15 percent (or two percent of all locations), but would require an ongoing operational

¹ Such a policy is consistent with the hybrid fiber-coax (HFC) strategy of cable systems’ DOCSIS 4.0 and its 10 Gbps down/6 Gbps up capability <https://www.cablelabs.com/technologies/docsis-4-0-technology>

subsidy estimated at around \$2 billion annually (or about half the current High Cost Fund subsidy).

Figure 1: Estimated cumulative investment required to increase fixed broadband deployment from the current 86% to 100% of U.S. locations.



Source: www.fcc.gov/general/connect-america-fund-phase-ii-models (last visited January 16, 2017).

This study demonstrates how it is possible to build broadband like we build highways: figure out what it costs and pay a qualified workforce once. While this study has not been updated, it remains a fair estimate of the total amount required for the policies in the LIFT Act to be implemented. While there have been expenditures and appropriations since 2017, the \$80 billion number remains a rational forecast. This is because while the 2017 study used the best maps available at the time, as this committee knows those maps were seriously flawed and underestimated unserved areas by assuming that if one location in a census block could get broadband service, then the entire census block had broadband service available. It would be unrealistic for the new maps ordered by this committee in the 2020 Broadband DATA Act to not identify significantly more unserved locations. Another adjustment to the 2017 estimate would be the Act’s wise expansion of target areas to include not just unserved areas, but also “low tier” service areas.

Mapping – Tomorrow is the first anniversary of this committee’s Broadband DATA Act being signed into law. The committee’s action was crucial to rectifying the Commission’s lack of meaningful knowledge about the deployment of broadband service. Two topics are important to understanding the reality of the mapping challenge.

The first reality is that until recently the companies resisted providing the FCC with adequate information. That, thankfully, has changed. But let’s not forget, the internet service providers know where their lines run; they could not manage their business otherwise. The second realization is that it is the matching of those lines with over 150 million address data items that provides the needed information.

Both of these realities are further complicated by the fact that the desired work product really isn’t a “map,” it is not an atlas you can pull from the shelf – it is a living and constantly changing database.

If ever there should be a bipartisan issue, it is getting that database right – including its constant updating with real time connectivity, not emailed spreadsheets. Acting Chairwoman Rosenworcel has initiated such an effort. Jean Kiddoo, the person she has put in charge of the effort, is among the agency’s best.

The old axiom “If you can measure it, you can manage it” has never been truer. Knowing what is happening in the field is essential to running effective programs. At the same time, good management organizes for bringing the different but necessary components together at the assembly point in a synchronized manner. The goal for the Commission and the Congress should be to synch their components. The goal should be that the database is ready when the money is ready to flow.

Managing Disbursement – In order to deploy the dollars identified for broadband deployment, the LIFT Act proposes a competitive bidding system. Such a Dutch auction was successful in the

Broadcast Incentive Spectrum Auction. This process reveals the true amount of subsidy necessary to make different projects economically viable and then awards the subsidy at the lowest possible level to meet that need.

The auction team at the FCC is the best in the world, having run over 100 auctions. What is often forgotten, however, is that running the bidding, while by no means easy, is only as good as the rules that determine the details governing that bidding and who gets to participate. The recent RDOF auction was an example of a good idea poorly managed. In selecting among bidders, it is necessary to look beyond network speed and latency as the only criteria. There must be rigorous pre-qualification tests for bidders to determine both their financial, construction, and operational experience and capabilities. The FCC must have a clear understanding of the scalability, sustainability, durability, resiliency, and reliability of what the public's money will be buying.

There is a three-part test to consider when developing plans to expend public monies to subsidize broadband. First, to exploit the marketplace efficiencies of auctions. Second, to recognize the subsidies are for areas where service would not otherwise be provided absent such subsidy, not to pay for a service that has already been financed by private funds. Third, the need for results is immediate; waiting for multiple years to see if bidders deliver is unacceptable. And there need to be consequences for promises not kept.

BROADBAND ADOPTION

The other great failure of our national policy is how low-income Americans may have broadband passing their door, but do not bring it inside. [One calculation](#), using Census Bureau data, estimated nearly 80 percent of those without broadband in their home have it available outside their door but choose not to use it. A [Pew Research report](#) found the biggest reason for this is that the monthly cost is “too expensive.”

There are more – by some [estimates](#) multiple times more – Americans who have broadband passing their residence but do not use it as there are unserved Americans. A recent study found [40 percent](#) of US seniors lack sufficient broadband. This occurs at precisely the moment when you need the internet to sign up for a COVID vaccination, telehealth is of increased importance, safe shopping means online shopping, and social interaction is confined to video services. At the other end of the age spectrum, almost [10 million students](#) do not have the home internet needed for distance learning.

To address the broadband adoption challenge requires resolving multiple issues:

A Phone Program in an Internet Era – As with the deployment challenge, the federal government’s efforts to address internet adoption tried to shoehorn internet access into telephone policy. The Reagan administration’s decision to pay \$9.25 per month to subsidize basic telephone service meant that everyone would be able to call 9-1-1. It was called “Lifeline” service, but it was limited to what was known at the time – *i.e.*, “telephone” service.

In 2016, the FCC expanded Lifeline to subsidize low-income broadband service, both wired and wireless. The problem was that the \$9.25 subsidy does not go very far when it comes to helping pay for a broadband connection that [averages](#) almost \$70 per month. According to [Pew Research](#) there is a 36 point gap in broadband penetration between the 92 percent of adults in households earning \$75,000 or more with broadband, and the 56 percent of adults in households earning less than \$30,000 annually.

A Benton Foundation [study](#) found low-income Americans can afford about \$10 per month for broadband service. Providers of smartphone-based services have been able to price below this benchmark and to make a business out of the \$9.25 subsidy, but that service is weak tea compared to fiber, with slower data speeds, data caps that limit internet usage, and devices with small screens and tiny keyboards.

Emergency Broadband Benefit Program – When Congress created the Emergency Broadband Benefit Program (EBB), it helped break out of the Lifeline conundrum. Authorizing and funding the FCC to provide up to \$50 per month in broadband support for eligible households put an end to shoehorning broadband support into a program designed for another purpose. Lifeline should be for telephone service, as it has been since the Reagan administration, while a separate broadband program deals with the expanded needs of the 21st century. The additional \$9.3 billion in the LIFT Act will allow that differentiated broadband program to continue beyond the current appropriation.

When applied to the average broadband subscription price, the EBB benefit brings the affordability of high-quality broadband closer to the \$10 level in the Benton Institute study. But the EBB is an emergency program. The additional funds the LIFT Act authorizes are important to the continuation of the emergency program. Before long, however, it will be necessary to remove “emergency” and institute an ongoing program with a long-term funding mechanism.

Non-Price Adoption Issues – The LIFT Act not only helps to reduce the effective cost of broadband connectivity by funding the EBB, but also attacks the more complicated question of digital readiness: the training and tools necessary to maximize that connectivity. Among these often interconnected issues are the simple lack of a computer and training in its use, fear of the unknown including concerns about privacy, and how to control internet content.

COVID has increased awareness among non-adopters as to why access to the internet is important. By funding state level digital equity programs, the LIFT Act wisely puts such adoption programs closer to the intended recipients.

Implementation – If good maps are the *sine qua non* of the deployment support programs, the validation of eligibility to participate in a broadband support program – whether Lifeline or EBB – plays an equally important role in the adoption support effort. In 2016 I complained about how the Lifeline program allowed the companies receiving the subsidies to verify the eligibility

of customers. It was like “the fox guarding the henhouse,” I said. To address that issue, as well as make it easier for individuals to apply for Lifeline, we created a third-party National Eligibility Verifier.

A key component of the Verifier is the ability to coordinate its efforts with already existent databases used to validate participation in other federal support programs such as the Supplemental Nutrition Assistance Program (SNAP). Unfortunately, five years after the creation of the Verifier it still has not been implemented in all 50 states. The LIFT Act identifies that as a problem and orders that the necessary integration and cooperation occur.

PROMOTING COMPETITION, TRANSPARENCY AND PUBLIC SAFETY

There are numerous other important initiatives in the LIFT Act that are worthy of support including: innovative loan programs administered by NTIA; collection of data, including pricing data, to determine network resiliency; E-Rate support for school bus WiFi; and requiring open access to the networks that are constructed with federal funds. There are three specific provisions that I want to close this testimony by emphasizing:

Non-Corporate Broadband – For too long there have existed anti-competition, anti-consumer state laws that prohibit local governments, public-private partnerships and cooperatives from delivering broadband service. These laws were passed by state legislatures and have had the effects of denying the benefits of competition to citizens. The LIFT Act appropriately preempts these anti-competitive statutes.

Pricing and Information Transparency – One of the lessons we learned in the reform of the E-rate program was the importance of transparency about pricing. The market is a wonderful enforcer if the purchaser is well informed and, for instance, knows what others are paying for a service. The LIFT Act would promote transparency for consumer broadband prices by requiring the FCC to collect from service providers data about the price of broadband service plans and

subscription rates. One of the reasons the per Mbps price for E-rate services declined by 90 percent was the mandatory transparency that allowed school districts to know what others were paying.

Another way of helping to create informed consumers is to require information transparency. In 2016 the FCC [adopted](#) what we referred to as “nutritional labeling” for broadband. Its implementation unfortunately was a casualty of the change in administration.

Broadband Facts			
Mobile broadband consumer disclosure			
Device Compatibility			
If you want to use your existing device, learn more about compatibility .			
If you want to obtain a device, learn more about prices and other options .			
Choose Your Data Plan - These prices do not include costs for obtaining a device from us.			
	High Speed Data allowance per month		
	1GB	3GB	5GB
Monthly charge	\$35.00	\$45.00	\$60.00
When you exceed the data allowance	\$10.00/Additional GB	Slowed speeds	NA
Learn more about other included services/features .			
Additional pricing options, plans and promotions can be found here .			
Coverage Map			
Charges and Terms Common to All Plans			
Monthly fees			
Administrative fee	\$1.20		
Regulatory fee	\$0.13		
One-time fees			
Activation fee	\$50.00		
Deposit	\$50.00		
Early termination fee	\$240.00		
Government Taxes and Fees, and Other Carrier Surcharges May Also Apply: Varies by location			
Performance - Individual experience may vary			
	3G	4G	
Typical speed	Typical Speed	Typical Speed	
1.5 Mbps downstream / 600-900 Kbps upstream	6-12 Mbps downstream / 3-8 Mbps upstream	6-12 Mbps downstream / 3-8 Mbps upstream	
Typical latency	Typical latency	Typical latency	
Less than 120 milliseconds	Less than 120 milliseconds	Less than 120 milliseconds	
Typical Packet Loss	Typical Packet Loss	Typical Packet Loss	
0.08%	0.08%	0.08%	
Network Management			
Application-specific network management practices?	Yes		
Subscriber-triggered network management practices?	Yes		
More details on network management			
Privacy See our privacy policy			
Complaints or Inquiries To contact us online (125)456-7890; To submit complaints to the FCC: online (888)225-5322			
Learn more about the terms used on this form and other relevant information at the FCC's website.			

Broadband Facts	
Fixed broadband consumer disclosure	
Choose Your Service Data Plan for 50Mbps Service Tier	
Monthly charge for month-to-month plan	\$60.00
Monthly charge for 2 year contract plan	\$55.00
Click here for other pricing options including promotions and options bundled with other services, like cable television and wireless services.	
Other Charges and Terms	
Data included with monthly charge	300GB
Charges for additional data usage – each additional 50GB	\$10.00
Optional modem or gateway lease – Customers may use their own modem or gateway; click here for outgoing	\$10.00/month
Other monthly fees	Not Applicable
One-time fees	
Activation fee	\$50.00
Deposit	\$50.00
Installation fee	\$25.00
Early termination fee	\$240.00
Government Taxes and Other Government-Related Fees May Apply: Varies by location	
Other services on network	
Performance - Individual experience may vary	
Typical speed downstream	53 Mbps
Typical speed upstream	8 Mbps
Typical latency	35 milliseconds
Typical packet loss	0.08%
Network Management	
Application-specific network management practices?	Yes
Subscriber-triggered network management practices?	Yes
More details on network management	
Privacy See our privacy policy	
Complaints or Inquiries To contact us online (125)456-7890; To submit complaints to the FCC: online (888)225-5322	
Learn more about the terms used on this form and other relevant information at the FCC's website.	

The goal of the label was to help consumers understand what they were buying. In that regard, it is not only similar to food label information, but also the financial information required on every credit card statement. This format has been developed, coordinated with the agency’s consumer advisory committee, and is ready to go.

Next Generation 9-1-1 – As I conclude, I must address one extremely important component of the LIFT Act: the authorization of \$15 billion in grants for the deployment of next generation 9-

1-1 (NG911). Every time I testified before this committee as Chairman, I made it a point to talk about the need to bring 9-1-1 into the digital age and how that required funding support for local governments and public safety agencies. The LIFT Act will not only connect Americans to the most important network of the 21st century, but it will also save lives.

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Mr. Chairman and members of the Committee, this bold initiative has been a long time coming. It creates the opportunity to finally address the internet inadequacy on a holistic rather than piecemeal basis. It will make lives better for students and seniors. It will boost the economy by making available everywhere the services we have come to rely on during COVID. It will create jobs and invest in America's future. This is a great step forward.